Claims

I CLAIM:

1. A method for improving a quality of a signal in a separation scheme by employing a plurality of stationary sensors, the method comprising:

(a) sensing information about a fluid particle with at least some of the plurality of stationary sensors and producing at least one signal for each stationary sensor used, based on said information;

(b) operating on the signals using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal with greater signal to noise ratio than any of the individual plurality of signals; and

(c) using said signal with greater signal to noise ratio to produce a chromatogram.

2. The method of claim **1** wherein additional information is sensed about a plurality of fluid particles, said additional information being combined to produce a chromatogram.

3. The method of claim **1** wherein the fluid particle flows in a capillary tube along which the plurality of sensors is arrayed, and wherein the step of sensing information about a fluid particle with at least some of the plurality of stationary sensors comprises the steps of:

(a) selecting a first sensor when the fluid particle is located adjacent to said first sensor;

(b) sensing information about the fluid particle with the first sensor;

(c) selecting a second sensor when the fluid particle is no longer located adjacent to the first sensor but is adjacent to the second sensor; and

(d) sensing information about the fluid particle with the second sensor.

4. The method of claim **3** wherein the location of the fluid particle is determined by detecting a marker spike.

5. The method of claim **4** wherein the marker spike arises from a difference between a refractive index between a sample solvent and a separation solvent.

6. The method of claim **4** wherein the marker spike arises from a spike reproducibly related to at least one separated peak.

7. The method of claim **4** wherein the marker spike, reproducibly related to a separated peak, is upstream of all sample peaks in the separation.

8. The method of claim **4** wherein the marker spike is an absorbance spike.

9. The method of claim **8** wherein the marker spike is generated by adding an absorbance marker with a reproducible relationship to a location of the sample injection.

10. The method of claim **8** wherein the marker spike is generated by adding an absorbance marker with a reproducible relationship to a timing of a sample injection.

11. The method of claim **10** wherein the absorbance spike arises from an absorbance marker added in a solvent.

12. The method of claim **3** wherein a second plurality of sensors sense information about additional fluid particles during a time when the fluid particle is adjacent to the first sensor.

13. The method of claim **12** wherein a number of the second plurality of sensors

is predetermined.

14. The method of claim **12** wherein the sensed information from the second plurality of sensors is assembled into a chromatogram.

15. The method of claim **1** wherein the plurality of sensors are photocell sensors.

16. A method for improving a quality of a signal in a fluid-based separation scheme by employing a plurality of stationary sensors, the method comprising:

(a) stopping a fluid solution adjacent to the plurality of stationary sensors;

(b) sensing information about the solution with at least some of the plurality of stationary sensors;

(c) operating on signals from each of the at least some of the plurality of stationary sensors using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal with greater signal to noise ratio than any of the individual plurality of signals; and

(d) using said signal with greater signal to noise ratio to produce a chromatogram.

17. The method of claim **16** wherein the step of stopping the fluid solution comprises the steps of:

(a) detecting a solvent spike in the solution;

(b) tracking said solvent spike as it moves; and

(c) stopping the solvent spike in the neighborhood of a predetermined photocell sensor.

18. The method of claim **16** wherein a predetermined number of sensors are used as the at least some of the plurality of sensors.

19. The method of claim **16** wherein the operated on signals are assembled into a chromatogram.

20. The method of claim **16** wherein the plurality of sensors are photocell sensors.

21. An apparatus for improving a quality of a signal in a fluid-based separation scheme, the apparatus comprising:

(a) a plurality of stationary sensors for sensing information about a fluid particle; and

(b) at least one calculation unit operating on the signals using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal with greater signal to noise ratio than any of the individual plurality of signals.

22. The apparatus of claim **21** wherein additional information is sensed about a plurality of fluid particles, the apparatus additionally comprising means for combining said additional information to produce a chromatogram.

23. The apparatus of claim **21** wherein the fluid particle flows in a capillary tube along which the plurality of sensors is arrayed, and wherein sensing information about a fluid particle with the plurality of stationary sensors is accomplished with apparatus comprising:

(a) a first selector for selecting a first sensor when the fluid particle is located adjacent to said first sensor; and

(b) a second selector for selecting a second sensor when the fluid particle is no longer located adjacent to the first sensor but is adjacent to the second sensor.

24. The apparatus of claim **23** additionally comprising means for determining the location of the fluid particle by detecting a solvent spike.

25. The apparatus of claim **23** additionally comprising a second plurality of sensors to sense information about additional fluid particles during a time when the fluid particle is adjacent to the first sensor.

26. The apparatus of claim **25** including means to predetermine a quantity of the second plurality of sensors.

27. The apparatus of claim **25** including means for assembling the sensed information from the second plurality of sensors into a chromatogram.

28. The apparatus of claim **21** wherein the plurality of sensors are photocell sensors.

29. An apparatus for improving a quality of a signal in a capillary separation scheme by employing a plurality of stationary sensors, the apparatus comprising:

(a) means for stopping a flow of a solution adjacent to the plurality of stationary sensors;

(b) sensors for sensing information about the solution with at least some of the plurality of stationary sensors; and

(c) at least one calculation unit operating on signals from each of the at least some of the plurality of stationary sensors using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal with greater signal to noise ratio than any of the individual plurality of signals.

30. The apparatus of claim **29** wherein determining an appropriate stopping point for the flow of the solution comprises the steps of:

(a) means for detecting a solvent spike in the solution;

(b) means for tracking said solvent spike as it flows; and

(c) means for stopping the solvent spike at a predetermined photocell sensor.

31. The apparatus of claim **29** including a means for determining a predetermined quantity of sensors to be used as the at least some of the plurality of sensors.

32. The apparatus of claim **29** including means to assemble the operated on signals into a chromatogram.

33. The apparatus of claim **29** wherein the plurality of sensors are photocell sensors.